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no. 45

UNITED STATES NAVAL OBSERVATORY
CIRCULAR NO. 45.

U. S. Naval Observatory, Washington 25, D. C.

September 8, 1953

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS

JUNE-JULY, 1953

By Winifred Sawtell

These results are based upon measurements made at the Naval Observatory on plates secured either there or at the Mt. Wilson Observatory. The symbols used for the entries in the successive columns are as follows:

U.T., the epoch of observation in Universal Time.

No., the identifying number of the group assigned by Mt. Wilson.

Δl , the heliographic difference in longitude from the central meridian, measured positive to the west.

ϕ , the heliographic latitude, measured positive to the north.

ρ , the heliocentric angular distance from the line joining the centers of the Earth and Sun.

A , the true area of the umbra plus penumbra, expressed in millionths of the visible hemisphere.

s , the number of spots.

An asterisk means that no Mt. Wilson number was assigned. Plates secured at the Naval Observatory are indicated by N, and those at Mt. Wilson by M. The plate quality, which follows, is indicated by:

1, Poor; 2, Fair; 3, Good; 4, Very Good; 5, Excellent.

The following five quantities are listed successively at the end of each day, and give for that day:

1. The total number of groups, g .
2. The longitude of the central meridian, L_0 .
3. The latitude of the center of the disc, B_0 .
4. The total value of A .
5. The total value of s .

The mean daily area and the mean relative sunspot number, $r=10g+s$ are given at the end of the month.

These results are a continuation of those published in the *Monthly Weather Review* from February 1, 1927 to December 31, 1947.

JUNE

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s	
2,566	11123	-52	-14	53	12	1	8,557	11124	+14	+14	20	6	3	
M-5	11122	-33	-13	34	182	4	M-5	11124	+15	+13	20	12	2	
	11122	-33	-14	35	73	1		11124	+22	+18	27	109	2	
	11122	-28	-13	31	170	2		11122	+43	-16	45	145	5	
	11121	+39	+14	42	12	2		11122	+45	-16	47	12	2	
	11121	+40	+12	42	16	2		11122	+46	-15	48	6	1	
	11121	+42	+13	44	6	2		11122	+48	-15	50	6	1	
	11121	+43	+12	45	6	1		11122	+49	-16	52	6	1	
	(3)	(286)	(-1)		477	15		11122	+51	-14	53	121	1	
								(2)	(207)	(0)		423	18	
3,574	11124	-51	+15	53	6	2	9,710	11124	+31	+13	34	48	1	
M-5	11124	-48	+16	50	6	1	N-3	11124	+34	+14	36	61	1	
	11124	-47	+15	50	16	3		11124	+37	+17	41	85	1	
	11122	-20	-14	25	170	1		11122	+57	-17	60	170	1	
	11122	-18	-15	23	73	4		11122	+66	-15	67	145	2	
	11122	-16	-14	22	6	1		(2)	(191)	(0)		509	6	
	11122	-15	-14	20	145	1		10,562	11124	+40	+15	42	12	1
	11122	-14	-13	19	6	1	M-4	11124	+42	+14	43	61	4	
	(2)	(273)	(0)		428	14		11124	+43	+15	44	6	1	
4,603	11124	-37	+15	41	12	3		11124	+46	+16	48	16	1	
M-5	11124	-36	+16	40	97	3		11124	+48	+17	51	73	4	
	11124	-35	+17	39	16	3		11122	+69	-15	70	121	1	
	11124	-35	+15	38	16	6		11122	+78	-14	78	145	1	
	11124	-33	+15	36	6	2		(2)	(180)	(+1)		434	13	
	11124	-33	+16	37	24	2		11,564	11124	+55	+14	56	6	2
	11124	-32	+16	36	145	5	M-4	11124	+61	+17	63	16	2	
	11122	-7	-14	16	170	2		11122	+83	-15	83	73	1	
	11122	-5	-14	15	16	2		(2)	(167)	(+1)		95	5	
	11122	-3	-15	15	24	2		12,678	11124	+78	+17	78	24	1
	11122	-2	-14	14	133	1	M-3		(1)	(152)	(+1)		24	1
	(2)	(259)	(0)		659	31		13,708	11126	-85	+9	85	73	1
5,710	11124	-24	+14	28	36	4	M-2		(1)	(139)	(+1)		73	1
M-5	11124	-23	+15	27	36	4		14,569	11126	-83	+8	83	48	1
	11124	-22	+15	26	48	3	M-3	11126	-83	+9	83	48	1	
	11124	-17	+16	23	145	3		11126	-80	+9	30	97	3	
	11122	+8	-14	16	194	2		11126	-77	+8	77	97	2	
	11122	+14	-13	19	145	1		11126	-75	+8	75	12	1	
	(2)	(244)	(0)		604	17		11126	-74	+9	74	145	3	
6,719	11124	-10	+15	18	6	1		11128	+5	+15	16	6	2	
M-5	11124	-8	+15	17	16	3		11127	+23	-2	23	6	1	
	11124	-7	+14	16	36	4		(3)	(127)	(+1)		459	14	
	11124	-3	+16	16	194	2		15,560	11126	-68	+9	68	16	1
	11122	+22	-15	26	170	3	M-5	11126	-66	+8	66	121	8	
	11122	+24	-15	28	12	2		11126	-65	+7	65	6	1	
	11122	+27	-14	31	145	1		11126	-63	+8	63	48	4	
	(2)	(231)	(0)		579	16		11126	-61	+9	61	12	2	
7,584	11124	+0	+15	15	6	1		11126	-58	+8	58	97	1	
M-5	11124	+2	+15	15	24	6		11128	+17	+15	22	6	2	
	11124	+4	+15	15	12	4		11128	+17	+16	23	6	1	
	11124	+6	+18	20	6	1								
	11124	+7	+17	20	145	4								
	11122	+31	-15	34	194	3								
	11122	+35	-16	38	16	2								
	11122	+37	-14	41	145	1								
	(2)	(220)	(0)		548	22								

JUNE JULY

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
		$^{\circ}$	$^{\circ}$	$^{\circ}$					$^{\circ}$	$^{\circ}$	$^{\circ}$		
	11128	+18	+15	23	6	1	26,600	11130	-70	-17	72	48	1
	11128	+20	+16	24	12	3	N-3	11129	+14	+13	18	6	1
	(2)	(114)	(+1)		330	24		11129	+17	+14	22	6	1
16,657	11126	-55	+9	55	12	1	(2)	(328)	(+2)		60	3	
M-1	11126	-53	+9	53	6	1	27,656	11130	-57	-15	62	12	1
	11126	-51	+8	52	16	3	N-1	11130	-56	-15	60	24	2
	11126	-50	+8	51	73	3	(1)	(314)	(+3)		36	3	
	11126	-48	+7	49	61	1	28,693	11130	-41	-16	45	24	1
	11126	-47	+8	48	97	8	N-2	(1)	(300)	(+3)		24	1
	11126	-44	+8	44	61	3	29,579	11130	-30	-16	35	12	1
	11128	+33	+16	35	12	1	N-2	(1)	(288)	(+3)		12	1
	11128	+34	+15	36	12	3	30,597	11130	-16	-16	25	12	1
	(2)	(100)	(+1)		350	24	N-2	(1)	(275)	(+3)		12	1
18,806	11126	-18	+8	20	12	1		Mean for 28 days					
N-2	11126	-16	+9	18	121	2		$A=272, r=26.4$					
	11126	-14	+8	16	73	1	1,610				0	0	
(1)	(71)	(+1)			206	4	N-4	(0)	(262)	(+3)		0	0
19,689	11129	-77	+13	77	145	3	2,592	11131	-59	-17	62	16	1
N-2	11126	-7	+8	11	48	1	N-2	(1)	(249)	(+3)		16	1
	11126	-6	+8	9	73	1	3,594	11131	-48	-17	52	12	1
	11126	-3	+8	7	61	1	N-4	(1)	(235)	(+3)		12	1
(2)	(59)	(+2)			327	6	4,851				0	0	
20,642	11129	-75	+12	75	48	1	N-3	(0)	(219)	(+3)		0	0
N-2	11129	-66	+10	66	121	1	5,676				0	0	
	11126	+4	+9	8	24	2	N-2	(0)	(208)	(+3)		0	0
	11126	+7	+8	10	73	2	6,677				0	0	
	11126	+11	+9	14	48	2	N-3	(0)	(195)	(+4)		0	0
(2)	(47)	(+2)			314	8	7,599				0	0	
21,671	11129	-60	+15	58	24	1	N-3	(0)	(182)	(+4)		0	0
N-2	11129	-51	+13	52	145	1	8,704				0	0	
	11126	+21	+9	22	12	1	N-4	(0)	(168)	(+4)		0	0
	11126	+25	+9	26	12	1							
(2)	(32)	(+2)			193	4							
22,587	11129	-50	+14	52	6	1							
N-3	11129	-40	+9	41	12	3							
	11129	-39	+11	40	109	1							
(1)	(21)	(+2)			127	5							
23,590	11129	-26	+10	27	12	2							
N-3	11129	-26	+11	27	109	1							
(1)	(8)	(+2)			121	3							
24,597	11129	-14	+10	16	12	1							
N-3	11129	-14	+12	17	12	1							
	11129	-12	+12	16	73	2							
(1)	(354)	(+2)			97	4							
25,581	11129	-3	+13	12	12	1							
N-3	11129	-2	+11	9	12	1							
	11129	-1	+12	10	12	2							
	11129	0	+13	12	48	2							
(1)	(341)	(+2)			84	6							

JULY

U. T.	No.	Δl	φ	ρ	A	s	U. T.	No.	Δl	φ	ρ	A	s
9.635 N-4	11132	-85	-9	85	485	1	19.567 M-3	11132	+52	-7	54	16	1
	(1)	(155)	(+4)		485	1		11132	+53	-8	55	97	1
10.622 N-3	11132	-77	-12	77	97	1		(1)	(24)	(+5)		113	2
	11132	-68	-10	70	388	1	20.631 N-2	11132	+67	-8	68	48	2
	11133	+7	+7	8	12	1		11132	+68	-7	69	24	1
	(2)	(142)	(+4)		497	3		11132	+69	-8	70	48	1
11.641 N-3	11132	-63	-11	64	97	1		(1)	(10)	(+5)		120	4
	11132	-56	-9	57	194	1	21.626 N-3	11136	+6	+5	6	6	1
	11132	-55	-9	56	145	1		(1)	(357)	(+5)		6	1
	(1)	(129)	(+4)		436	3	22.629 N-2					0	0
12.587 M-5	11132	-48	-12	51	6	1		(0)	(343)	(+5)		0	0
	11132	-47	-13	50	73	3						0	0
	11132	-40	-10	43	218	6	23.678 N-4					0	0
	(1)	(116)	(+4)		297	10		(0)	(330)	(+5)		0	0
13.628 N-1	11132	-35	-12	38	48	1						0	0
	11132	-28	-10	32	97	1	24.631 N-3					0	0
	11132	-27	-11	31	194	1		(0)	(317)	(+5)		0	0
	(1)	(103)	(+4)		339	3						0	0
14.630 N-4	11132	-21	-12	26	61	2	25.614 N-3					0	0
	11132	-15	-10	21	85	2		(0)	(304)	(+5)		0	0
	11132	-14	-11	21	73	2						0	0
	11132	-14	-8	19	36	1	26.722 N-2					0	0
	11132	-13	-11	19	109	2		(0)	(289)	(+5)		0	0
	11134	+42	-12	45	61	1						0	0
	(2)	(89)	(+4)		425	10	27.678 N-2					0	0
15.631 N-2	11132	-7	-12	17	61	1		(0)	(277)	(+5)		0	0
	11132	-5	-13	17	24	1						0	0
	11132	-2	-9	13	85	1	28.629 N-4					0	0
	11132	-1	-10	14	73	1		(0)	(264)	(+6)		0	0
	11132	0	-11	15	170	1						0	0
	(1)	(76)	(+4)		413	5	29.632 N-2					0	0
16.812 N-3	11132	+3	-12	17	12	1		(0)	(251)	(+6)		0	0
	11132	+6	-12	17	48	1						0	0
	11132	+7	-11	17	12	1	30.684 N-3					0	0
	11132	+13	-10	19	48	1		(0)	(237)	(+6)		0	0
	11132	+13	-11	20	16	1						0	0
	11132	+14	-12	21	97	2	31.626 N-3					0	0
	(1)	(60)	(+5)		233	7		(0)	(224)	(+6)		0	0
17.635 N-3	11132	+20	-11	26	16	1							
	11132	+26	-7	29	61	1							
	11132	+26	-8	29	16	1							
	11132	+27	-9	31	97	2							
	(1)	(50)	(+5)		190	5							
18.676 N-3	11135	+26	+11	27	24	1							
	11132	+37	-10	41	24	1							
	11132	+38	-8	41	61	1							
	11132	+39	-10	43	85	1							
	(2)	(36)	(+5)		194	4							

Mean for 31 days
A=122, r=7.7

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